

Claims

What is claimed is:

Sal
A₁

1. Shrink wrap material for protecting an object comprising a nonwoven fabric layer for engaging said object when the material is applied to said object, a heat shrinkable thermoplastic film layer having a pre-determined shrink response when heat is applied thereto and an adhesive applied to at least one of said nonwoven fabric layer or thermoplastic film in a predetermined pattern defining first areas bearing said adhesive and second areas being void of said adhesive, said nonwoven layer being intermittently bonded to said film by said adhesive, said nonwoven fabric including unbonded portions that overlie the second areas of the film, thereby protecting said surface from said bonded portions.

2. Shrink wrap material as claimed in Claim 1, wherein said predetermined pattern defining said first area includes parallel lines.

3. Shrink wrap material as claimed in Claim 1, wherein said predetermined pattern of adhesive defining said first areas include a first set of parallel lines and a second set of parallel lines crossing said first set of parallel lines.

4. Shrink wrap material as claimed in Claim 3, wherein said patterned adhesive is substantially diamond shaped.

5. Shrink wrap material as claimed in Claim 1, wherein said unbonded overlying portions of the nonwoven fabric include pillows having portions which extend over said bonded portions.

6. Shrink wrap material as claimed in Claim 5, wherein said unbonded portions of the nonwoven fabric separates from said film upon shrinking of the film.

Sub
A₂ 7. Shrink wrap material as claimed in Claim 5, wherein said pillows have an increasing average height dimension from base to pinnacle prior to application over a surface as the shrink rate of said film increases.

8. Shrink wrap material as claimed in Claim 7, wherein said average height dimension of said pillows increases by a factor of at least about two times for each 10% increase in the shrink rate of said film.

9. Shrink wrap material as claimed in Claim 1, wherein said adhesive covers between about 4.0 to about 33.0% of said nonwoven fabric layer or shrinkable thermoplastic film to which it is applied.

10. Shrink wrap material as claimed in Claim 9, wherein said adhesive is selected from the group consisting of pressure sensitive and non-pressure sensitive hot melt adhesives.

11. Shrink wrap material as claimed in Claim 1, wherein said thermoplastic film is a shrinkable stretchable thermoplastic film. ✓

12. Shrink wrap material as claimed in Claim 1, wherein said nonwoven fabric is in the form of hydroentagled fibers. ✓

13. Shrink wrap material as claimed in Claim 1, wherein said adhesive is applied to said nonwoven. ✓

14. A method of manufacturing a material for protecting surfaces comprising the steps of providing a shrinkable film having a pre-determined shrink response when heat is applied thereto and a nonwoven fabric, applying an adhesive using a gravure roll to at least one of said film or nonwoven fabric in a predetermined pattern defining first areas bearing said adhesive in said pattern and second areas substantially larger than the first areas extending between the pattern of said first areas bearing said adhesive, and adhering the nonwoven fabric and film together by said adhesive.

15. The method as claimed in Claim 14, wherein said adhesive is a hot melt adhesive and said nonwoven fabric is adhered to said film by pressing the film and nonwoven fabric together with limited pressure.

200220 24952007

16. The method as claimed in Claim 14, wherein said adhesive is applied to said gravure roll by rotating said roll past an adhesive dispensing station extending across the outer circumferential surface of the roll, said adhesive dispensing station applying adhesive to the first and second portions of the roll, and then rotating the roll past a doctor blade extending across the outer circumferential surface, said doctor blade removing adhesive from the raised portions of the roll while permitting adhesive to remain in the lowered portions of the roll, and then rotating said roll to apply the adhesive to one of said fiber or nonwoven fabric.

17. The method as claimed in Claim 16, wherein said adhesive is applied to said nonwoven fabric.

18. The method as claimed in Claim 16, wherein said shrinkable film and said nonwoven fabric are intermittently bonded.

19. The method as claimed in Claim 16, wherein said thermoplastic film is a shrinkable stretchable film.

20. An article of manufacture produced by the method of Claim 14.

Sub
A3 21. Shrink wrap material for protecting an object comprising: a heat shrinkable film outer layer having a pre-determined shrink response when heat is applied thereto, a nonwoven fabric inner layer for engaging said object when said material is shrunk around said object, and a patterned adhesive intermittently applied to said nonwoven layer by a gravure roll and disposed between said film outer layer and said nonwoven fabric inner layer thereby coupling said film outer layer to said nonwoven fabric inner layer to form bonded areas and unbonded areas whereby, upon the application of heat to said material, the nonwoven fabric occurring along said unbonded areas overlie the adhesive occurring along said bonded areas thereby protecting the object from the bonded areas.

22. Shrink wrap material as claimed in Claim 21, wherein said patterned adhesive includes substantially parallel lines.

Sub
A4 23. Shrink wrap material as claimed in Claim 21, wherein said patterned adhesive includes a first set of substantially parallel lines and a second set of perpendicular to said first set of parallel lines.

24. Shrink wrap material as claimed in Claim 23, wherein said patterned adhesive is substantially diamond shaped.

25. Shrink wrap material as claimed in Claim 21, wherein said unbonded overlying portions of the nonwoven fabric include edge portions extending from the adhesive, said edge portions being deflected over said bonded areas.

26. Shrink wrap material as claimed in Claim 25, wherein said unbonded areas of the nonwoven fabric separates from said film upon shrinking of the film.

27. Shrink wrap material as claimed in Claim 21, wherein said unbonded areas of the nonwoven fabric include deflecting portions deflecting over the bonded areas of the nonwoven upon shrinking of the film to thereby protect the surface from abrasion by the bonded portions of the nonwoven.

28. Shrink wrap material as claimed in Claim 21, wherein said unbonded overlying portions of nonwoven fabric include pillows having portions which extend over said bonded portions.

29. Shrink wrap material as claimed in Claim 21, wherein said pillows have an increasing average height dimension from base to pinnacle prior to application over a surface as the shrink rate of said film increases.

30. Shrink wrap material as claimed in Claim 29, wherein said average height dimension of said pillows increases by a factor of at least about two times for each 10% increase in the shrink rate of said film.

20030912 092000 2496207

31. Shrink wrap material as claimed in Claim 21, wherein said adhesive covers between 4.0 to about 33.0% of said film.

All
New
Claims
As

10075642 62200